

Single Stage Autonomous Solar Water Pumping System Using PMSM Drive

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Abstract: *Water supply technology has advanced significantly with the development of autonomous solar water pumping devices. These solar-powered systems offer a dependable and sustainable way to pump water in remote and off-grid areas. They are the perfect solution for solving problems with water delivery in places with restricted access to power because of their capacity to function independently and without the requirement for grid electricity. Autonomous solar water pumping systems present a viable and creative approach to a sustainable water supply at a time when demand for renewable energy solutions is only expected to increase. Sustainable and effective agricultural techniques have advanced significantly with the introduction of autonomous solar water pumping equipment. These solar-powered devices provide an economical and environmentally responsible way to address the problems of declining water supplies and growing energy expenses. Adoption of autonomous solar water pumping devices will be essential to maintaining the productivity and long-term sustainability of our world's food supply as the agricultural sector develops.*

Keywords: Water Pumps, PMSM, Solar PV array, MPPT, Smart grid.